

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Previously presented) A recombinant yeast cell which comprises:

a heterologous G protein-coupled receptor (GPCR) expressed in the cell membrane of said yeast cell such that signal transduction activity via said receptor is modulated by interaction of an extracellular region of the receptor with an extracellular signal, said heterologous GPCR acting as a surrogate for an endogenous yeast pheromone receptor in a pheromone response pathway of the yeast cell; and

a chimeric G protein subunit which comprises

an endogenous yeast Gpa1 subunit in which at least the last four C-terminal amino acids of said Gpa1 are replaced with at least the last four C-terminal amino acids of a first heterologous G protein subunit, and in which the N-terminus of said Gpa1 is operably linked to at least the first five N-terminal amino acids of a second heterologous G protein subunit, wherein said first and second heterologous G protein subunits are the same or different; such that expression of said chimeric G protein subunit functionally integrates said heterologous GPCR into the pheromone response pathway of said yeast cell; and wherein modulation of the signal transduction activity of said heterologous GPCR by an extracellular signal provides a detectable signal.

2-52. (Cancelled)

53. (Original) A recombinant yeast cell which comprises:

a heterologous G protein-coupled receptor (GPCR) expressed in the cell membrane of said yeast cell such that signal transduction activity via said receptor is modulated by interaction of an extracellular region of the receptor with an extracellular signal, said heterologous GPCR acting as a surrogate for an endogenous yeast pheromone receptor in a pheromone response pathway of the yeast cell; and

a chimeric G protein subunit comprising an endogenous yeast G_pα1 subunit in which at least the last four C-terminal amino acids of said G_pα1 are replaced with at least the last four C-terminal amino acids of a first heterologous G protein subunit, and in which at least the first five N-terminal amino acids of said G_pα1 are replaced with at least the first five N-terminal amino acids of a second heterologous G protein subunit, wherein said first and second heterologous G protein subunits are the same or different; such that expression of said chimeric G protein subunit functionally integrates said heterologous GPCR into the pheromone response pathway of said yeast cell; and
wherein modulation of the signal transduction activity of said heterologous GPCR by an extracellular signal provides a detectable signal.

54. (Original) The yeast cell of claim 53, wherein said chimeric G protein subunit comprises an endogenous yeast G_pα1 subunit in which the last five C-terminal amino acids of said G_pα1 are replaced with the last five C-terminal amino acids of a first heterologous G protein subunit, and in which the first five N-terminal amino acids of said G_pα1 are replaced with the first 11 N-terminal amino acids of a second heterologous G protein subunit, wherein said first and second heterologous G protein subunits are the same.

55-56. (Cancelled)

57. (Previously presented) The yeast cell of claim 1, wherein in said chimeric G protein subunit, the last five C-terminal amino acids of said G_pα1 are replaced with the last five C-terminal amino acids of a heterologous G protein subunit.

58. (Cancelled)

59. (Original) A chimeric G-protein subunit which comprises an endogenous G_pα1 subunit in which at least the last four C-terminal amino acids of said G_pα1 are replaced with at least the last four C-terminal amino acids of a first heterologous G protein subunit, and in which the N-terminus of said G_pα1 is operably linked to at least the first five N-terminal amino acids of a second heterologous G protein subunit, wherein said first and second heterologous G protein subunits are the same or different.

60. (Original) The chimeric G-protein subunit of claim 59, in which the last five C-terminal amino acids of said G_pα1 are replaced with the last five C-terminal amino acids of said first heterologous G-protein subunit, and in which the first five N-terminal amino acids of said G_pα1 are replaced with the first 11 N-terminal amino acids of said second heterologous G protein subunit.

61-119 (Cancelled).

120. (New) The yeast cell of claim 1 or 53, wherein an endogenous yeast pheromone receptor protein is not produced in functional form.

121. (New) The yeast cell of claim 1 or 53, further comprising an indicator gene that produces a detectable signal upon functional coupling of the heterologous G protein coupled receptor to the G protein.

122. (New) The yeast cell of claim 1 or 53, wherein the yeast cell is a *Saccharomyces cerevisiae* cell.